CLAIMS

What is claimed is:

1. A method for controlling an overlay offset of a pilot lot in a semiconductor photolithographic process comprising the steps of:

defining an overlay registration specification of a first pilot lot and at least one additional lot on a user interface;

performing a photolithographic process on said first pilot lot;

measuring an overlay offset value of said first pilot lot; and

automatically performing photolithography on said at least one additional lot when said overlay offset value conforms to said overlay registration specification.

2. The method of claim 1 wherein said photolithographic process is automatically performed on said first pilot lot.

3. The method of claim 1 wherein said at least one additional lot is a second pilot lot.

4. The method of claim 1 wherein said at least one additional lot is not a pilot lot.

5. A method for controlling overlay registration when fabricating a microelectronic product comprising:

providing a photolithographic process cell comprising a photolithographic process tool, a photolithographic measurement tool and a computer controller;

introducing into the photolithographic process cell a new product order comprising a first lot and at least one additional lot, each having an overlay registration specification which is recorded in the computer controller;

dividing the first lot into a first pilot lot and a second pilot lot to be sequentially processed in the photolithographic process tool and measured in the photolithographic measurement tool while being controlled by the computer controller;

processing the first pilot lot in-line automatically within photolithographic process tool, measuring the overlay registration

thereof in-line automatically within the photolithographic measurement tool and assuring conformance thereof with the computer controller;

processing the second pilot lot in-line automatically within the photolithographic process tool, measuring the overlay registration thereof in-line automatically within the photolithographic measurement tool and assuring conformance thereof with the computer controller; and

processing the at least one additional lot in-line automatically within the photolithographic process tool.

6. The method of claim 5 wherein conformance of the first pilot lot is assured prior to processing the second pilot lot.

7. The method of claim 5 wherein conformance of the second pilot lot is assured prior to processing the at least one additional lot.

8. The method of claim 5 wherein an overlay registration of the at least one additional lot is neither measured nor conformance thereof assured.

9. The method of claim 5 wherein the new product order is for a microelectronic product selected from the group consisting of semiconductor products and ceramic substrate products.

10. The method of claim 5 wherein the photolithographic process tool is a stepper.

11. The method of claim 5 wherein the photolithographic process tool is a scanner.

12. A method for controlling overlay registration when fabricating a semiconductor product comprising:

providing a photolithographic process cell comprising a photolithographic process tool, a photolithographic measurement tool and a computer controller;

introducing into the photolithographic process cell a new semiconductor product order comprising a first lot and at least one additional lot, each having an overlay registration specification which is recorded in the computer controller;

dividing the first lot into a first pilot lot and a second pilot lot to be sequentially processed in the photolithographic process tool and measured in the photolithographic measurement tool while being controlled by the computer controller;

processing the first pilot lot in-line automatically within photolithographic process tool, measuring the overlay registration thereof in-line automatically within the photolithographic measurement tool and assuring conformance thereof with the computer controller;

processing the second pilot lot in-line automatically within the photolithographic process tool, measuring the overlay registration thereof in-line automatically within the photolithographic measurement tool and assuring conformance thereof with the computer controller; and

processing the at least one additional lot in-line automatically within the photolithographic process tool.

13. The method of claim 12 wherein conformance of the first pilot lot is assured prior to processing the second pilot lot.

14. The method of claim 12 wherein conformance of the second pilot lot is assured prior to processing the at least one additional lot.

15. The method of claim 12 wherein an overlay registration of the at least one additional lot is neither measured nor conformance thereof assured.

16. The method of claim 12 wherein the photolithographic process tool is a stepper.

17. The method of claim 12 wherein the photolithographic process tool is a scanner.

18. A pilot production overlay offset control system for connecting to a photolithography machine comprising:

a user interface for defining a fabrication specification for a first pilot lot and at least one additional lot, and for inquiring and/or managing an overlay offset datum of at least said first pilot lot; and

a computer controller providing said user interface, and for controlling a lithography process on said first pilot lot based on said fabrication specification defined by said user interface, and for performing a lithography process on said at least one additional lot based on said overlay offset datum of said first p8ilot lot.

19. The system of claim 18 wherein said computer controller provides for automatically controlling said lithography process on said first pilot lot and said at least one additional lot.

20. The system of claim 18 wherein said at least one additional lot is a second pilot lot.

21. The system of claim 18 wherein said at least one additional lot is not a pilot lot.

22. A system for controlling overlay registration when fabricating a microelectronic product comprising:

a photolithographic process cell comprising:

a photolithographic process tool;

a photolithographic measurement tool; and

a computer controller, wherein the computer controller is:

programmed with a photolithographic registration specification of a new product order of the microelectronic product; and

programmed to sequentially and automatically in-line process and qualify a first pilot lot of a new product order and a second pilot lot of the new product order through the photolithographic process tool and the photolithographic measurement tool, prior to processing an additional new product order lot of the new product in-line automatically through the photolithographic process tool.

23. The system of claim 22 wherein the first pilot lot is qualified prior to processing the second pilot lot.

24. The system of claim 22 wherein the second pilot lot is qualified prior to processing the at least one additional lot.

25. The system of claim 22 wherein the new product order is for a semiconductor product.

26. The system of claim 22 wherein the new product order is for a ceramic substrate product.

27. The system of claim 22 wherein the photolithographic process tool is a stepper.

28. The system of claim 22 wherein the photolithographic process tool is a scanner.